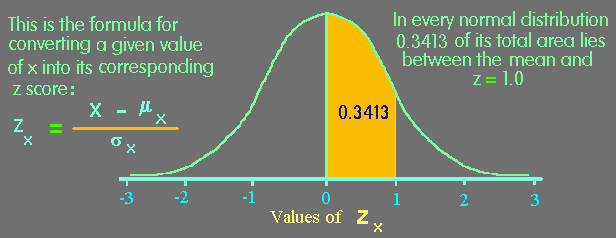
**REVIEW BASIC STATS**

**Z scores are a special application of the transformation rules. The z score for an item, indicates how far and in what direction, that item deviates from its distribution's mean, expressed in units of its distribution's standard deviation. The mathematics of the z score transformation are such that if every item in a distribution is converted to its z score, the transformed scores will necessarily have a mean of zero and a standard deviation of one.**

**Z scores are sometimes called "standard scores". The z score transformation is especially useful when seeking to compare the relative standings of items from distributions with different means and/or different standard deviations.**

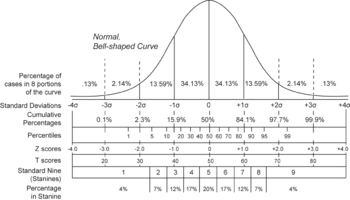
**Z scores are especially informative when the distribution to which they refer, is normal. In every normal distribution, the distance between the mean and a given Z score cuts off a fixed proportion of the total area under the curve. Statisticians have provided us with tables indicating the value of these proportions for each possible Z score.**



**Standard score**

From Wikipedia, the free encyclopedia

Jump to: [navigation](http://en.wikipedia.org/wiki/Standard_score#column-one), [search](http://en.wikipedia.org/wiki/Standard_score#searchInput)

[](http://en.wikipedia.org/wiki/File:Normal_distribution_and_scales.gif)

[http://bits.wikimedia.org/skins-1.5/common/images/magnify-clip.png](http://en.wikipedia.org/wiki/File:Normal_distribution_and_scales.gif)

Compares the various grading methods in a normal distribution. Includes: Standard deviations, cumulative percentages, percentile equivalents, Z-scores, T-scores, standard nine, percent in stanine

*"Standardize" redirects here. For industrial and technical standards, see* [*Standardization*](http://en.wikipedia.org/wiki/Standardization)*.*

*For Z-values in ecology, see* [*Z-value*](http://en.wikipedia.org/wiki/Z-value)*.*

*For Z-factor in high-throughput screening, see* [*Z-factor*](http://en.wikipedia.org/wiki/Z-factor)*.*

*For Z-Score Financial Analysis Tool, see* [*Z-Score Financial Analysis Tool*](http://en.wikipedia.org/wiki/Z-Score_Financial_Analysis_Tool)*.*

In [statistics](http://en.wikipedia.org/wiki/Statistics), a **standard score** indicates how many [standard deviations](http://en.wikipedia.org/wiki/Standard_deviation) an observation or [datum](http://en.wikipedia.org/wiki/Data) is above or below the mean. It is a [dimensionless quantity](http://en.wikipedia.org/wiki/Dimensionless_number) derived by subtracting the [population mean](http://en.wikipedia.org/wiki/Population_mean) from an individual [raw score](http://en.wikipedia.org/wiki/Raw_score) and then dividing the difference by the [population](http://en.wikipedia.org/wiki/Statistical_population) [standard deviation](http://en.wikipedia.org/wiki/Standard_deviation). This conversion process is called **standardizing** or **normalizing**; however, "normalizing" can refer to many types of ratios; see [normalization (statistics)](http://en.wikipedia.org/wiki/Normalization_(statistics)) for more.

The standard deviation is the unit of measurement of the z-score. It allows comparison of observations from different normal distributions, which is done frequently in research.

Standard scores are also called **z-values, *z*-scores, normal scores,** and **standardized variables;** the use of "Z" is because the normal distribution is also known as the "Z distribution". They are most frequently used to compare a sample to a [standard normal deviate](http://en.wikipedia.org/wiki/Standard_normal_deviate) (standard normal distribution, with *μ* = 0 and *σ* = 1), though they can be defined without assumptions of normality.

The z-score is *only* defined if one knows the population parameters, as in [standardized testing](http://en.wikipedia.org/wiki/Standardized_testing); if one only has a sample set, then the analogous computation with sample mean and sample standard deviation yields the [Student's t-statistic](http://en.wikipedia.org/wiki/Student%27s_t-statistic).

The standard score is not the same as the [z-factor](http://en.wikipedia.org/wiki/Z-factor) used in the analysis of [high-throughput screening](http://en.wikipedia.org/wiki/High-throughput_screening) data, but is sometimes confused with it

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